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IS : 8984 - 1978

Indian Standard

DIMENSIONS OF 127, 120 AND 620 ROLL FILM, BACKING PAPER AND FILM SPOOLS

UDC 771·531·31 : 77·021·58 : 771·332 : 006·76

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1979

Indian Standard

DIMENSIONS OF
127, 120 AND 620 ROLL FILM,
BACKING PAPER AND FILM SPOOLS

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(*Continued on page* 2)

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(*Continued from page* 1)

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AMENDMENT NO. 1 NOVEMBER 2004
TO
IS 8984 : 1978 DIMENSIONS OF 127, 120 AND 620 ROLL FILM, BACKING PAPER AND FILM SPOOLS

(*Page* 4, *clause* **2.7**, *line* 4) — Substitute '0.10 mm' *for* '0.08 mm'.

[*Page* 6, *clause* **3.2.1** (a)] — Substitute '0.145 mm' *for* '0.14 mm'.

[*Page* 6, *clause* **3.2.1**(b)] — Substitute '0.26 ± 0.02 mm' *for* '0.24 ± 0.04 mm'.

[*Page* 8, *clause* **4.2.1**(b)] — Substitute '0.26 ± 0.02 mm' *for* '0.267 5 ± 0.125 mm'.

[*Page* 8, *clause* **4.2.1**(c)] — Substitute '0.40 ± 0.10 mm' *for* '0.447 5 ± 0 012 5 mm'.

[*Page* 11, *clause* **5.2.1**(a)] — Substitute '0.145 mm' *for* '0.14 mm'.

[*Page* 11, *clause* **5.2.1**(b)] — Substitute '0.26 ± 0.02 mm' *for* '0.24 ± 0.04 mm' and add the following at the end of this clause:

'c) The thickness of the backing paper plus the poster for attaching the film to the backing paper shall be 0.40 ± 0.10 mm.'

(*Page* 12, *Table* 2, *Dimension* B) — Substitute '66.0' *for* '65.9' *and* '65.4' *for* '65.7'.

(CHD 1)

Reprography Unit, BIS, New Delhi, India

Indian Standard

DIMENSIONS OF 127, 120 AND 620 ROLL FILM, BACKING PAPER AND FILM SPOOLS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 19 September 1978, after the draft finalized by the Photographic Chemicals and Related Materials Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard is based substantially on ISO 732-1975 Photography — dimensions for 127, 120, and 620 roll film, backing paper, and film spools except for some minor modifications in the dimensions and marking of backing paper.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard specifies the dimensions of 127, 120 and 620 roll film, backing paper and film spools. It also specifies the requirements for printing the backing paper and for spooling the film and backing paper.

1.1.1 Roll film consists of three essential parts — a spool, a length of photographic film, and a backing paper. In this standard maximum and minimum dimensions are given for the film strip and spool, and minimum dimensions only for the backing paper.

2. TERMINOLOGY

2.0 For the purpose of this standard, the following definitions shall apply.

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*Rules for rounding off numerical values (*revised*).

2.1 Register Mark for Automatic Camera — A symbol or mark on the backing paper at a specific distance from the number '1' on the backing paper for use in certain types of automatic film metering cameras. (This mark is shown in Fig. 1, 3 and 5 as an arrow pointed at both ends, but the form is optional.)

2.2 Backing Paper — The protective strip of paper to which the film is attached. Backing paper is usually black on one side and coloured on the opposite side. Numerals are usually printed on the coloured side in a position where they can be viewed through the camera window.

2.3 Core of a Spool — The cylindrical part of the spool, extending between and connecting the flanges, around which the backing paper and film are wound.

2.4 Creep — The difference in location of the film and relative to the numbers on the backing paper when they are wound on the spool, compared to the respective position when laid out flat. This difference exists because the backing paper, being wound outside the film strip, assumes a curve of greater circumference than the film strip for each successive convolution.

2.5 End Margin — The distance from the end of the last picture to the end of the film strip. Included in the end margin is an allowance for attaching a developing clip.

2.6 Exposure Numbers—The consecutive numbers, or sets of numbers, printed on the outside of the backing paper away from the film (usually on the coloured side) which serve to determine the spacing of the exposures as these numbers are brought into position successively in the window of the camera. Some sizes of roll film bear more than one series of numbers, each series being associated with a particular picture size, and hence with cameras producing pictures of that size. Proper positioning of the window in the camera permits the use of the proper series of numbers for the picture size appropriate to that camera. For example, the film and backing paper represented by No. 120 are adapted for use in three types of cameras taking different picture sizes, and bear exposure number for eight pictures of 6 × 9 cm, twelve pictures of 6 × 6 cm or sixteen pictures of 4·5 × 6 cm.

2.7 Film — The sensitized material which receives the photographic image in the camera. Roll film usually consists of a gelatin-silver bromide emulsion coated on one side of a transparent cellulose plastics base about 0·08 mm thick, with a gelatin layer on the opposite side to counteract curl. The sensitive layer, however, may be coated on other base materials.

2.8 Flanges of a Spool — The discs attached to each end of the spool core, between which the film and backing paper are wound. The main function of the flanges is to prevent light from reaching the edges of the film.

2.9 Flat Film — The plane position of the film convenient for measuring, as distinguished from the position assumed by the film with relation to the backing paper as they are wound from one spool to the other in the camera.

2.10 Hub of a Spool — The projection beyond the flange of some spools, used as a bearing or support for the spool while in the camera. One hub usually contains a slot or other means for turning the spool.

2.11 Key Slot — *See* **2.19**.

2.12 Length of Film — The linear lengthwise dimensions of the film strip. Four lengths are recognized for each film in this standard — the minimum and maximum overall lengths when flat, the minimum projected length, and the minimum utilizable film length.

2.13 Minimum Dimensions — The lower limiting dimensions for film and backing paper as specified in this standard. In practice, many of the minimum dimensions for film and backing paper will often be exceeded because of manufacturing tolerances and safety margins.

2.14 Paper Slots — The slots or openings in the core for attaching the backing paper leader preliminary to winding in the cameras. The same slots are used by the manufacturer for winding the paper and film on the spool. It is understood that the slots permit the end of the backing paper to pass through the core of the spool.

2.15 Projected Film Length — The dimension which shows the distance, measured along the backing paper, between the two ends of the film when wound on the spool. The projected film length is the flat film length plus the creep.

2.16 Roll Film — A daylight-loading supply of photographic film for use in hand-held still picture cameras. It comprises a spool with solid opaque flanges on which is wound a continuous strip of backing paper having a substantially shorter strip of film attached to it in a definite position relative to the exposure numbers printed on the opposite side of the paper. Roll film is distinguished from aerial film, and also from other rolled films such as miniature camera film roll, which may have paper leaders and trailer spliced to the film, but which do not have backing paper as herein defined.

2.17 Spool for Roll Film — A core assembled to two solid opaque flanges between which a strip of film with backing paper can be wound to comprise a roll film. A slot or the equivalent is provided in at least one end of the spool for engaging the winding key of the camera.

2.18 Start Margin — The distance from the beginning of the film to the beginning of the first exposure. Included in the start margin is an allowance for attaching a developing clip.

2.19 Turning Slot (Also Called Key Slot) – A slot in at least one end of the spool which is engaged by the winding key of the camera. This slot may be in the flange or hub of the spool.

2.20 Utilizable Film Length — The portion of the film length that is utilized for exposing the pictures. It represents the film exclusive of start and end margins and is indicated in the figures by the dotted sections at each end of the film strip.

2.21 Window (of Camera) — A coloured transparent window (usually red) normally located in the back of a camera, through which the numbers of the backing paper can be seen as the film is wound through the camera.

3. DIMENSIONS OF SIZE 127

3.0 Dimensions of Film — The dimensions of size 127 roll film shall be in accordance with Fig. 1.

3.1 Maximum Film Length – The maximum overall film lenth shall not be more than 75 mm over the minimum.

3.2 Dimensions and Marking of Backing Paper — The dimensions of 127 size backing paper and the marking on it shall be in accordance with Fig. 1. The exact shape of the ends of the backing paper is not specified, but it shall be such as to fit the paper slot in the corresponding standard spool.

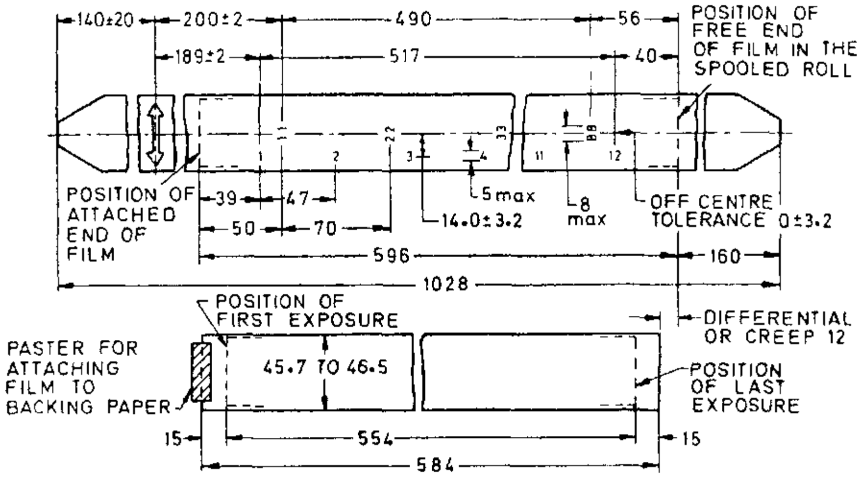
3.2.1 *Thickness*

a) The thickness of the backing paper shall not exceed 0·14 mm.

b) The thickness of the backing paper plus the film shall be 0·24 ± 0·04 mm.

c) The thickness of the backing paper plus the film plus the paster for attaching the film to the backing paper shall be 0·4 ± 0·1 mm.

3.2.2 *Orientation of Exposure Numbers* — The orientation of the exposure numbers is at the option of the manufacturer.


140±20
200±2
490
56
POSITION OF FREE END OF FILM IN THE SPOOLED ROLL
189±2
517
40
11
22
33
88
1
2
3
4
11
12
POSITION OF ATTACHED END OF FILM
39
47
50
70
5 max
14.0±3.2
8 max
OFF CENTRE TOLERANCE 0±3.2
596
160
1028
POSITION OF FIRST EXPOSURE
DIFFERENTIAL OR CREEP 12
PASTER FOR ATTACHING FILM TO BACKING PAPER
45.7 TO 46.5
POSITION OF LAST EXPOSURE
15
554
15
584

NOTE — All dimensions are minimum, except where a tolerance or maximum is shown.

All dimensions in millimetres.

FIG. 1 127 ROLL FILM

3.3 Paster — The paster shall preferably be not more than 25 mm in length in the direction of winding, and its width shall preferably be such that the edges are not more than 3 mm from the edges of the backing paper.

3.3.1 The overlap between the paster and the film shall not exceed 15 mm.

3.4 Dimensions of Spool — The dimensions of size 127 film spools shall be in accordance with Fig. 2 and Table 1. These dimensions apply to spools which are used in cameras with the following nominal picture sizes:

a) 4 × 6·5 cm

b) 4 × 4 cm

4. DIMENSIONS OF SIZE 120

4.0 Dimensions of Film — The dimensions of size 120 roll film shall be in accordance with Fig. 3.

4.1 Maximum Film Length — The maximum overall film length shall not be more than 50 mm over the minimum.

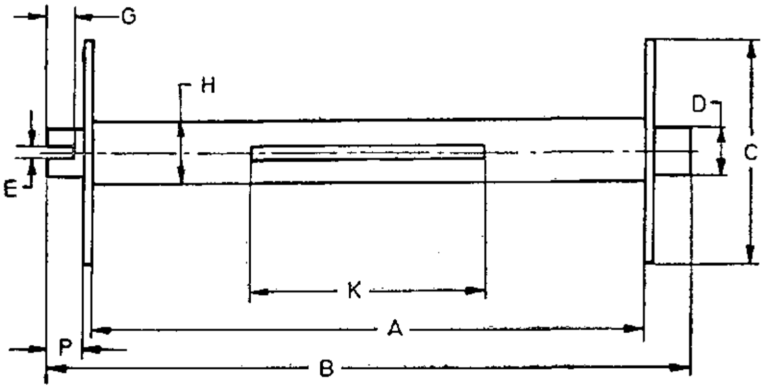


Fig. 2 127 Roll Film Spool

4.2 Dimensions and Marking of Backing Paper — The dimensions of size 120 backing paper and the marking on it shall be in accordance with Fig. 3. The exact shape of the ends of the backing paper is not specified, but it shall be such as to fit the paper slot in the corresponding standard spool.

4.2.1 *Thickness*

a) The thickness of the backing paper shall not exceed 0·145 mm.

b) The thickness of the backing paper plus the film shall be 0·267 5 ± 0·125 mm.

c) The thickness of the backing paper plus the film plus the paster for attaching the film to the backing paper shall be 0·447 5 ± 0·012 5 mm.

4.2.2 *Orientation of Exposure Numbers* — The orientation of the exposure numbers shall be at the option of the manufacturer.

4.3 Paster — The paster shall preferably be not more than 25 mm in length in the direction of winding and its width shall preferably be such that the edges are not more than 3 mm from the edges of the backing paper.

4.3.1 The overlap between paster and film shall not exceed 20 mm.

TABLE 1 DIMENSIONS OF SIZE 127 FILM SPOOLS

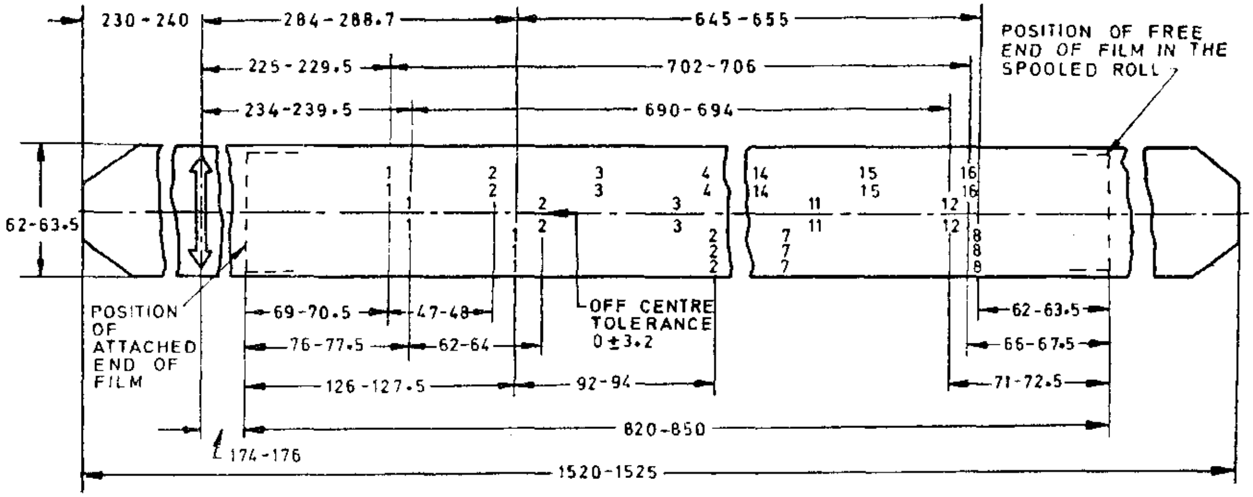
(*Clause* 3.4)

DIMENSION		mm	DIMENSION		mm
A[*]	*Max*	47·4	G	*Min*	2·5
	Min	47·1	H	*Max*	5·2
B	*Max*	55·4		*Min*	4·6
	Min	54·5	K	*Min*	20·0
C	*Max*	19·2	M	Tol	0·3
	Min	18·8			
D	*Max*	4·0	N	Tol	0·3
	Min	3·7			
E[†]	*Max*	1·6	P	*Max*	3·4
	Min	1·1		*Min*	2·7

NOTE — M = concentricity of D and C or one-half total dial runout.
N = concentricity of D and H or one-half total dial runout.

[*] These dimensions apply to spools with straight parallel flanges which are perpendicular to the core. A tolerance of 0·10 mm above maximum and below minimum dimensions shall be allowed for tilted distorted flanges.

[†] A key slot is required in one end of the spool so that it can be used as a take-up spool in the camera. Key slots may be provided in both ends at the option of the manufacturer.



All dimensions in millimetres.

FIG. 3 120 ROLL FILM

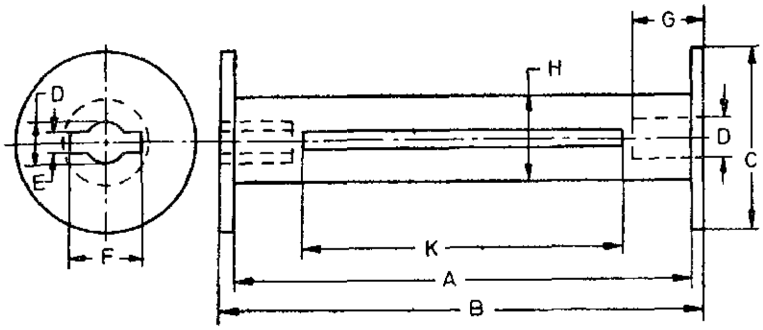


Fig. 4 120 Roll Film Spool

4.4 Dimensions of Spool — The dimensions of size 120 film spools shall be in accordance with Fig. 4 and Table 2. These dimensions apply to spools which are used in cameras with the following nominal picture sizes:

a) 6 × 9 cm
b) 6 × 6 cm
c) 4·5 × 6 cm

5. DIMENSIONS OF SIZE 620

5.0 Dimensions of Film — The dimensions of size 620 roll film shall be in accordance with Fig. 5.

Note — Some manufacturers use 120 size film dimensions for 620 size roll film.

5.1 Maximum Film Length — The maximum overall film length shall not be more than 75 mm over the minimum.

5.2 Dimensions and Marking of Backing Paper — The dimensions of size 620 backing paper and the marking on it shall be in accordance with Fig. 5. The exact shape of the ends of the paper is not specified, but it shall be such as to fit the paper slot in the corresponding standard spool.

Note — Some manufacturers use size 120 backing paper dimensions for size 620 backing paper.

5.2.1 *Thickness*

a) The thickness of the backing paper shall not exceed 0·14 mm.
b) The thickness of the backing paper plus the film shall be 0·24 ± 0·04 mm.

TABLE 2 DIMENSIONS OF SIZE 120 FILM SPOOLS

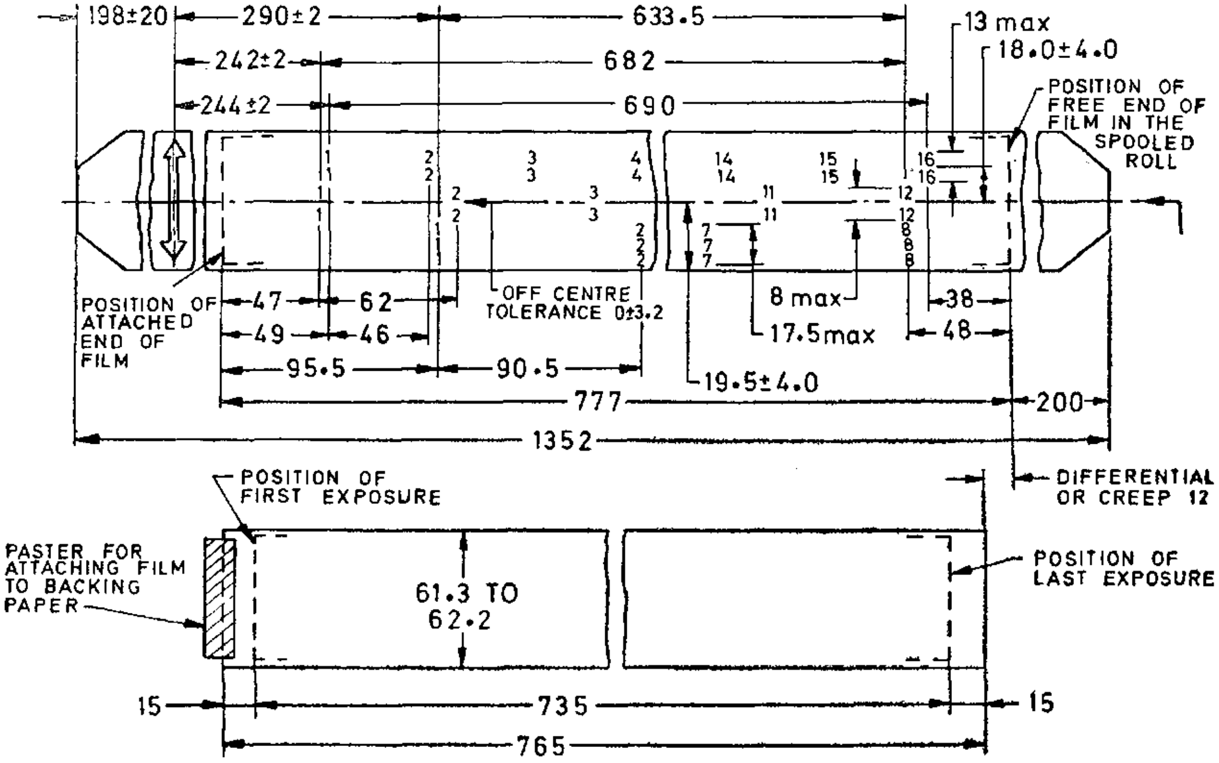
(*Clause* 4.4)

DIMENSION		mm	DIMENSION		mm
A*	*Max*	62·9	F†	*Max*	10·3
	Min	62·7		*Min*	10·2
B	*Max*	65·9	G	*Max*	9·2
	Min	65·7		*Min*	9·0
C	*Max*	25·00	H	*Max*	11·6
	Min	24·9		*Min*	11·5
D	*Max*	5·3	K	*Max*	44·0
	Min	5·2		*Min*	43·8
E†	*Max*	2·8	M	Tol	0·25
	Min	2·7	N	Tol	0·38

NOTE — M = concentricity of D and C or one-half total dial runout.
N = concentricity of D and H or one-half total dial runout.

*These dimensions apply to spools with straight parallel flanges which are perpendicular to the core. A tolerance of 0·10 mm above maximum and below minimum dimensions shall be allowed for tilted distorted flanges.

†A key slot is required in one end of the spool so that it can be used as a take-up spool in the camera. Key slots may be provided in both ends at the option of the manufacturer.


198±20
290±2
633.5
13 max
18.0±4.0
242±2
682
244±2
690
POSITION OF FREE END OF FILM IN THE SPOOLED ROLL
POSITION OF ATTACHED END OF FILM
47
62
49
46
95.5
90.5
OFF CENTRE TOLERANCE 0±3.2
8 max
17.5max
19.5±4.0
38
48
777
200
1352
POSITION OF FIRST EXPOSURE
DIFFERENTIAL OR CREEP 12
PASTER FOR ATTACHING FILM TO BACKING PAPER
61.3 TO 62.2
POSITION OF LAST EXPOSURE
15
735
15
765

Note — All dimensions are minimum, except where a tolerance or maximum is shown.

All dimensions in millimetres.

Fig. 5 620 Roll Film

5.2.2 *Orientation of Exposure Numbers* — The orientation of the exposure numbers is at the option of the manufacturer.

5.3 Dimensions of Spool — The dimensions of size 620 film spools shall be in accordance with Fig. 6 and Table 3. These dimensions apply to spools which are used in cameras with the following picture sizes:

a) 6 × 9 cm
b) 6 × 6 cm
c) 4·5 × 6 cm

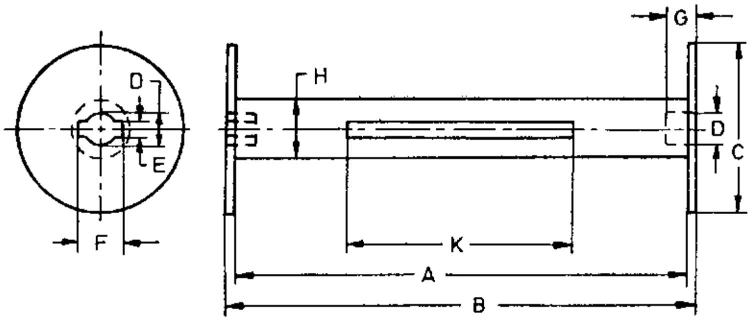


Fig. 6 620 Roll Film Spool

TABLE 3 DIMENSIONS OF SIZE 620 FILM SPOOLS

(*Clause* 5.3)

DIMENSION		mm	DIMENSION		mm
*A**	*Max*	62·9	*E*†	*Max*	2·0
	Min	62·6		*Min*	1·7
B	*Max*	64·1	*F*†	*Min*	6·1
	Min	63·5	*G*	*Min*	4·0
C	*Max*	23·2	*H*	*Max*	7·8
	Min	22·8		*Min*	7·0
D	*Max*	4·1	*K*	*Min*	31·0
	Min	3·9	*M*	Tol	0·3
			N	Tol	0·4

NOTE — M = concentricity of D and C or one-half total dial runout.
N = concentricity of B and H or one-half total dial runout.

*These dimensions apply to spools with straight parallel flanges which are perpendicular to the core. A tolerance of 0·10 mm above maximum and below minimum dimensions will be allowed for tilted or distorted flanges.

†A key slot is required in one end of the spool so that it can be used as a take-up spool in the camera. Key slots may be provided in both ends at the option of the manufacturer.

INDIAN STANDARDS ON PHOTOGRAPHIC CHEMICALS

IS :

246-1972	Sodium thiosulphate, crystalline (*third revision*)
247-1972	Sodium sulphite, anhydrous (*third revision*)
248-1978	sodium bisulphite (sodium metabisulphite) (*third revision*)
332-1967	Chromium potassium sulphate (chrome alum) (*first revision*)
388-1972	Hydroquinone, photographic grade (*second revision*)
500-1972	Potassium metabisulphite, photographic grade (*second revision*)
557-1968	Sodium acetate, technical and photographic (*first revision*)
2211-1972	Anhydrous sodium thiosulphate, photographic grade (*first revision*)
2318-1974	Silver nitrate, photographic grade (*first revision*)
2797-1964	Potassium bromide
4173-1975	4-Methylaminophenol sulphate (*first revision*)
5379-1969	Ammonium thiosulphate, photographic grade
5380-1976	Sodium bromide, photographic grade (*first revision*)
5381-1969	Quantity packaging of sensitized photographic materials
5431-1969	Definition of motion-picture safety films
6139-1971	Sizes of photographic paper for general use
6212-1971	Method for the determination of residual thiosulphate in processed black and white photographic films and plates
8281-1976	Hydroxylamine sulphate, photographic grade

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

Quantity	Unit	Symbol
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

Quantity	Unit	Symbol
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

Quantity	Unit	Symbol	Conversion
Force	newton	N	1 N = 0·101 972 kgf
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m²
Frequency	hertz	Hz	1 Hz = 1 c/s (s⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Pressure, stress	pascal	Pa	1 Pa = 1 N/m².

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